

REMARKS

Claims 1-19 are pending.

Claims 1-4, 6-9, 11 and 13-19 are amended.

Claims 1-19 are rejected.

**35 USC 112, second paragraph**

Claim 13 is rejected under 35 USC 112, second paragraph as being indefinite.

The Examiner is unclear about the meaning of claim 13. The claim now reads:

A method according to claim 5, wherein the alkenyl succinic anhydride incorporating a maximum of 1 % by weight of polymeric residues is prepared by removing polymeric residues from the alkenyl succinic anhydride.

The Applicants believe this corrects the indefiniteness of claim 13.

No new matter is added.

**Amended claims 1-4, 6-9, 11, 13-19**

Claims 1, 2, 3, 4, 14, 15, 16 and 19 are amended to read a sized paper or board. This change is supported by the examples, especially the examples on page 9, under Pilot Paper Machine Trials.

Claims 6, 7, 8, 9, 17 and 18 are amended to change the article "A" to "The". Claim 11 is amended to correct an obvious error by changing "of" to "or".

No new matter is added.

**35 USC 103(a)**

**Claims 1-19 are rejected under 35 USC 103(a) as being unpatentable over Tansley et al in view of Fakoukakis, US 4956478 and further in view of Frohlich, US 5969011 and Sonoda, JP 62106091.**

The examiner asks the question " from the disclosures of Tansley et al and Fakoukakis and the knowledge generally available to one of ordinary skill in the art, why would it not have been obvious to use ASA of the highest possible purity as the sizing agent in the paper of Tansley? See page 4 of the Office Reply, third paragraph.

The Applicants do not need to answer the Examiner's question above. While a purer product **may** be desirable, it is not obvious to one skilled in the art that the reduction of certain impurities (polymeric residues) would lead to a better sized paper or board-better lactic acid resistance and better peroxide resistance. The Applicants have discovered that the removal of the polymeric residues in ASA gives a sized paper or board which when used as paper sizing, shows better performance. See page 13 under Summary and Conclusions. Thus the Applicants believe that the compositions of Fakoukakis when used in the paper of Tansley, show unobvious results. The combination of the two references must be therefore be unobvious.

The Applicants maintain that the combination of Tansley with Fakoukakis leads to unobvious results on a sized paper or board. This is especially true as Fakoukakis makes no mention of papermaking. Tansley only mentions ASA in passing and is primarily concerned with AKD.

The Examiner does provide references which show that ASA is well known for use in paper. However, even though ASA is well known for use in paper, the results obtained when the compositions of Fakoukakis (although Applicants do not agree that the present compositions are the same as the compositions of Fakoukakis) are used in the paper of Tansley show unobvious results. Thus the presently claimed sized paper or board is unobvious.

**In regard to claim 13:**

Examiner believes it to be obvious on the basis of Fakoukakis and Sonodo to further purify the product of Fakoukakis by removing the polymeric residues.

Applicant points out that although Sonodo is directed to a purified product, Sonodo's ASA all contain polymeric residues considerable greater than 1%.

Sonodo mentions that ASA is used as a sizing agent **in the form of a mixture containing tar substances and high molecular weight polymer for regular purposes such as a sizing agent**

and high purity product is required for information recording material. So, Sonodo teaches away and offers no motivation to form a sized paper or board of the present invention—that is the use of high purity product for sizing. See page 2, paragraph 4 of the English translation of Sonodo.

While it may be desirable to use purified products, the Applicants point out that the claims as they are amended claim a sized paper or board comprising paper or board and a sizing which comprises an aqueous emulsion of ASA wherein the alkenyl succinic anhydride incorporates a maximum of 1 % by weight of polymeric residues.

Examiner believes the Fakoukakis ASA to meet the limitations of the aqueous emulsion of ASA presently claimed. Even if this were the case (and Applicant does not believe it to be so), Fakoukakis makes no discussion of papermaking. Once used on paper for sizing, neither Fakoukakis nor Tansley could have predicted the improved attributes of the paper.

**In regard to claims 14-16:**

The Examiner believes the sizing composition of the paper of Tansley in view of Fakoukakis to have substantially the same structure as the instant invention.

Applicants point out that the claims have been amended to claim a sized paper or board comprising paper or board and a sizing which comprises an aqueous emulsion of ASA wherein the alkenyl succinic anhydride incorporates a maximum of 1 % by weight of polymeric residues.

Fakoukakis does not suggest use of his ASA composition on paper or board. And it is the sized paper or board that the Applicants are claiming. The sized paper or board of the invention shows attributes not predictable in view of Tansley in view of Fakoukakis.

**In regard to claims 17-19:**

The Examiner believes these other ingredients (stabilizer, cationic polymer and starch) to be typical and well known in the art.

The Applicants submit that Tansley in view of Fakoukakis the rejection does not work based on the fact that the combination leads to a product with unexpected attributes (See page 13 under Summary and Conclusions). Neither Frohlich or Sonoda make up for the deficiency. Thus the Applicants believe this rejection is overcome.

**35 USC 102(b) or 35 USC 103(a)**

**Claim 10 is a product-by-process claim. The product of Tansley appears to be the same as or similar to the claimed product.**

Claim 10 is a product-by process claim. Claim 10 claims a paper or board made by the process of claim 5. Claim 5 is directed to a method of producing a sized paper or board by adding to the wet-end or by size press a sizing agent which is an alkenyl succinic anhydride incorporating a maximum of 1 % by weight of polymeric residues.

The Applicants believe Tansley does not anticipate the present claim 10. The Examiner states that the product of Tansley appears to be the same as or similar to the claimed product, a paper or board sized with ASA, although produced by a different process.

Tansley does **not produce a paper or board sized with ASA**. All examples of Tansley are directed to ketene dimer. Thus the product taught by the reference of Tansley is a ketene dimer. Therefore, the product of claim 10 cannot be anticipated by Tansley.

Furthermore, Tansley makes no mention of the polymeric residue content of the ketene dimer. There is no suggestion in Tansley to distill the ketene dimer. Thus, claim 10 cannot be anticipated or obvious in light of Tansley for two reasons: Tansley describes a sizing for paper or board containing ketene dimer not ASA. As Tansley is not directed to ASA and exemplifies only ketene dimer, there is no reason to suppose that low amounts of polymeric residues from ASA are part the product of Tansley. Thus the present product by process claim cannot be anticipated or be obvious in light of Tansley.

Reconsideration and withdrawal of the rejection of claims 1-19 is respectfully solicited in light of the remarks *supra*.

Since there are no other grounds of objection or rejection, passage of this application to issue with claims 1-19 is earnestly solicited.

Applicants submit that the present application is in condition for allowance. In the event that minor amendments will further prosecution, Applicants request that the examiner contact the undersigned representative.

Respectfully submitted,



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